

## Book Review

Dhyani, S., Gupta, A.K. and Karki, M. (Editors). 2020. *Nature-based Solutions for Resilient Ecosystems and Societies*. Springer Nature, Singapore. X+455 pages. ISBN 978-981-15-4712-6 (eBook). Euro 117.69.

The term Nature-based solutions (NBS) refer to the and processes to tackle socio-environmental challenges. These challenges include issues such as climate change, water security, water pollution, food security, human health, biodiversity loss, and disaster risk management. The International Union for Conservation of Nature (IUCN) pioneered the concept of Nature-based Solutions 20 years ago, first developing a formal definition and then the Global Standard for Nature-based Solutions as a safeguard for their use. IUCN defines NBS as actions to protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits (Cohen-Shacham et al. 2016), with common societal challenges cited as being climate change, food security, disaster risks, water security, social and economic development as well as human health. NBS also need to be maintained and sometimes restored, but not to the same extent, so can be more versatile than their gray counterparts.

The volume originated from the discussions held at the workshop on “Ecosystem Management, Nature-based solutions and sustainable development goals” held during December 2014. It was organised into four sections viz., decision making tools for mainstreaming NBS; evidences and examples for NBS implementation; advanced institutional provisions and policies for NBS and insights to research innovations in NBS.

The 24 book chapters of this volume report both research-based findings and synthesis of knowledge gathered over several years by the authors. Since sustainability at every level, from an individual household to the global community, depends on secure supplies of and equitable access to water, food, and energy in a healthy environment, most emphasis has been placed on protecting productive ecosystems that include both human modified and natural ecosystems. Since South Asia is experiencing the fastest rate of urbanization, some of the chapters also cover urban ecosystems and the role of ecosystems

sustainable management and use of natural features and restoration of urban green and blue spaces in protecting and managing them. In the introductory chapter the editors set out the framework they propose and how the NBS could be applied in disaster risk management and development of a strategy for adaptation to climate change.

The spring centric to aquifer centric approach suggested as an NBS for enhancing the water security in mountain regions have great potential for management of water resources. The landscape based approaches that were presented by several articles provides insights to the case studies from global south where the NBS potentials were demonstrated. The articles on NBS for restoration of freshwater ecosystems and restoration of degraded landscapes summarize the Indian and other experiences. The section on insights to research innovation in NBS is a brocket of case studies highlighting the specific instances where research based solutions were suggested for addressing the location specific problems. The volume concludes with a summery assessment of NBS based pathways to realise and achieve SDGs and post 2015 targets.

While NBS are successful in flood management, a majority of case studies coming from the Global North thus resulting in a lack of data for many medium- and low-income nations (Chausson et al. 2020). Several researchers concluded that further research needs to be conducted in the Global South to determine the efficacy of NBS on climate, social and ecological standards (Eggermont et al. 2015, Lavorel et al. 2015, Wamsler et al. 2020). This volume seems to be an effort to fill those gaps. It is crucial that grey infrastructures continue to be used with green infrastructures (Chen et al. 2021). Multiple studies recognize that while NBS is very effective and improves flood resilience when simulated, it is unable to act alone and must be in coordination with grey infrastructure (Chen et al. 2021, Kourtis et al. 2021). When NBS is used alongside grey infrastructure the benefits transcend flood management and improve social conditions,

increase carbon sequestration and prepare cities for planning for resilience (Hankin et al. 2021).

In summary, this book includes important use and potential of NBS in addressing challenges posed by climate change, natural disasters, food and energy crisis, water scarcity and desertification, loss of biodiversity, degradation of ecosystems, migration and rapid urbanization. This volume is recommended for both academic researchers and policy planners as it deals with both methodological issues and reports success stories.

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